Position: Communities of Practice can be used to Address Challenges in Regulation and Governance of Generative AI in South East Asian Countries

Anthony Lianjie Li, Premikha M., Taufeeq Wahab
Preventive Medicine Residency
National University Health System
1E Kent Ridge Road, SG 119228
anthony.li@mohh.com.sg, premikha.m@mohh.com.sg, muhammad.taufeeq@mohh.com.sg

Muhamad Noor Alfarizal
Monash University
Jeffrey Cheah School of Medicine and Health Sciences
Subang Jaya, Selangor, MY 47500
muhamadnoor.alfarizal@monash.edu

Ying Tze Siow, Ivan WM Koh
Health Regulation Group
Ministry of Health
16 College Road COMB, SG 169854
siow_ying_tze@moh.gov.sg, ivan_wm_koh@moh.gov.sg

Clive Tan
Ministry of Home Affairs
Home Team Medical Services
28 Irrawaddy Rd, SG 329560
dr_clive_tan@mha.gov.sg

Abstract

The proliferation of open-source, open-weight, and quantized large language models (LLMs) presents a transformative opportunity to advance health equity in Lower and Middle-Income Countries (LMICs), particularly within the diverse landscape of South East Asia (SEA). However, this potential is shadowed by the risk of exacerbating health disparities if these models, predominantly trained on data from Upper-Income Countries (UICs), are deployed without careful consideration of regional demographics, health needs, and cultural contexts. While Western nations are advancing regulatory frameworks for generative AI, SEA countries are at a more nascent stage. This paper summarizes key challenges in AI regulation and governance identified at a recent SEA leadership summit. We argue that a "one-size-fits-all" approach is untenable for this heterogeneous region. Instead, we propose the establishment of a **regional Community of Practice (CoP)**. This CoP would serve as a collaborative platform for sharing knowledge, co-creating standards, and building trust among stakeholders. It would facilitate regional regulatory sandboxes and work towards harmonized approval processes, ensuring that generative AI is developed and deployed safely, effectively, and equitably. We

39th Conference on Neural Information Processing Systems (NeurIPS 2025) Workshop: The Second Workshop on GenAI for Health: Potential, Trust, and Policy Compliance.

conclude with a call to action for AI researchers, developers, administrators, and healthcare professionals to contribute to this vital initiative.

1 Background

The advent of powerful generative AI, especially accessible open-source LLMs, signals a potential paradigm shift for public health in resource-constrained settings [7]. For SEA, this could mean leveraging LLMs for critical applications like the early detection of Tuberculosis or reducing infant and maternal mortality—persistent challenges in the region [4] [1]. This democratization of AI offers LMICs the chance to leapfrog traditional development barriers, deploying sophisticated solutions without prohibitive investments in talent or high-performance computing infrastructure. However, this promise is double-edged. A significant concern is the potential for these technologies to worsen existing health disparities. LLMs trained on data from UICs may underrepresent the demographics, genetic predispositions, health challenges, and cultural nuances of SEA populations, leading to biased or ineffective outcomes [9]. As noted in research on AI fairness, models can perpetuate and even amplify societal biases present in their training data [2].

To harness the benefits while mitigating the risks, robust regulation and governance are paramount. Yet, SEA countries find themselves at varying stages of readiness. While the US and EU have made strides with frameworks like the EU AI Act [6], most SEA nations are still developing their foundational strategies. Recognizing this gap, regional organizations like the World Health Organization (WHO) Western Pacific Regional Office (WPRO) and the Precision Public Health Asia (PPHA) Society have begun convening leaders to chart a path forward [11] [10].

This paper consolidates the key regulatory and governance challenges for healthcare generative AI, as articulated at a recent SEA leadership summit. We propose that a regional Community of Practice (CoP) is the most effective mechanism to address these shared challenges. We also issue a call to action for global and local stakeholders to support and participate in this SEA-sited CoP.

2 Known Challenges to Developing Healthcare AI Regulation and Governance in SEA Countries

The SEA region is a mosaic of cultures, languages, economies, and political systems [5]. This profound heterogeneity directly impacts the development, deployment, and governance of LLM applications. Differences in economic progress translate to a wide spectrum of digital penetration and health informatics maturity. While Singapore has a highly digitized healthcare system, other nations are still building foundational electronic health record infrastructure [12]. Furthermore, healthcare models diverge significantly, shaped by unique political histories and demographic needs [3].

Given this context, a uniform regulatory framework airlifted from another region or imposed across SEA is destined to fail. Any viable governance strategy must be adaptable and sensitive to local conditions. We group the challenges stemming from this diversity into four broad tiers:

1. **Data Representativeness:** Developing LLMs that are effective and unbiased for SEA requires diverse, local data. However, data infrastructure, interoperability standards, and data-sharing policies vary widely, complicating the creation of representative datasets.
2. **Data Sovereignty:** Countries in the SEA region have varying laws and regulations regarding data ownership and usage. This can create challenges for cross-border data sharing and collaboration, which are essential for developing effective LLMs.
3. **Cultural and Linguistic Nuance:** Healthcare is deeply personal and culturally embedded. An LLM-powered chatbot that works in one cultural context may be inappropriate or ineffective in another. The region's vast linguistic diversity presents further challenges for model training and validation.
4. **Regulatory Capacity:** The capacity of national regulatory bodies to evaluate complex AI systems differs across countries. A lack of specialized expertise can lead to either overly permissive or excessively restrictive regulations, hindering both safety and innovation.

Therefore, any proposed approach must be sufficiently nuanced to accommodate different levels of digital readiness, pressing healthcare priorities, and the unique cultural fabric of each nation.

3 Understanding the Unknown Challenges Through Dialogue and Collaboration

To map the complex landscape of "unknown unknowns," WPRO and PPHA, in collaboration with the Malaysian government and Monash University Malaysia, convened a SEA leadership summit on July 15, 2025. The summit brought together 40 key stakeholders from Singapore, Malaysia, Thailand, Cambodia, Vietnam, the Philippines, Brunei, and Timor Leste. Attendees included policymakers, academics, private sector leaders, civil society representatives, and funders.

The summit was structured into three focused sessions (see Table 1). The summit's methodology for reaching consensus on appropriate solutions, such as establishing a Community of Practice (CoP), was rooted in structured, iterative dialogue and collaborative problem-solving. Each session was designed to build upon the previous one, guiding participants from identifying shared challenges to co-creating actionable strategies.

During the first session, participants surfaced common use cases and contextual needs, establishing a foundation of mutual understanding. The second session enabled stakeholders to openly discuss implementation barriers, fostering trust and highlighting areas where collective expertise could address shared obstacles. In the final session, the focus shifted to regional cooperation, where participants collaboratively mapped out actions that transcend national boundaries.

Consensus was achieved through facilitated discussions, real-time synthesis of key points, and iterative refinement of proposed solutions. Moderators encouraged inclusive participation, ensuring that diverse perspectives were represented. Action items, such as the formation of a regional CoP, were distilled from recurring themes and validated through group affirmation. A detailed report of the meeting is attached as supplementary material and will be publicly released by the organizers in late 2025.

Session Title	**Description**
Identifying common use cases of AI and GenAI for public health in SEA	**Invited Presentations:** Participants provided a situation analysis and presented use cases where AI and GenAI have been effectively applied to address public health challenges in the SEA region. **Moderated Discussion:** Participants shared their experience, implementation journey, and "use cases" of common interest to the SEA region.
Overcoming implementation challenges	**Invited Presentations:** Participants presented on the challenges faced in implementing AI and GenAI solutions in public health, including technical, ethical, and regulatory issues. **Moderated Discussion:** Participants shared challenges encountered in the implementation process and potential strategies to overcome them.
Identifying needs for regional cooperation	**Invited Presentations:** Participants discussed the need for regional cooperation in addressing public health challenges and shared examples of successful collaborations. **Moderated Discussion:** Participants identified actions that no single country can undertake alone and are better tackled through regional cooperation and partnership (e.g., curation of regional benchmark datasets and regulatory standards).

Table 1: Summary of Leadership Summit Sessions

4 Mapping Out the Healthcare AI Regulatory and Governance Challenges

Across discussions on resource, funding, and manpower constraints, a consistent theme emerged: profound uncertainty regarding the regulation and governance of healthcare AI. This can be broadly categorized into the following 4 stakeholder groups.

Developers: AI developers, both local and international, face an unclear and fragmented regulatory landscape. This ambiguity about approval pathways, data requirements, and validation standards creates business risk and can deter investment in developing solutions for the region.

Healthcare Institutions: Healthcare organizations are hesitant to procure and integrate AI solutions without clear guidance on quality assurance, and accountability. They struggle with questions about how to validate third-party models and integrate them into clinical workflows.

Healthcare Practitioners: Clinicians are on the front line of AI deployment and face significant medicolegal ambiguity. They lack clarity on their professional responsibility when an AI tool provides an incorrect recommendation, creating a chilling effect on adoption.

Patients: Patients may be unsure about the safety and efficacy of AI-driven healthcare solutions. They face challenges in understanding how these tools work, the data used to train them, and the implications for their privacy and care. This uncertainty can erode trust in healthcare systems and hinder the adoption of beneficial technologies.

Governments in the region acknowledge these challenges. However, the sheer velocity of AI development makes it difficult to move beyond a reactive posture. The current approach often involves issuing ad-hoc guidelines for specific use cases rather than establishing a comprehensive, long-term masterplan. Consequently, strategies tend to center on "known" domains like data privacy and cybersecurity standards. Compounding this is a legitimate fear that premature or overly stringent regulation could stifle nascent innovation.

5 Community of Practice for Healthcare AI Regulation and Governance

Recognizing that these challenges are shared across the region, summit participants converged on a powerful solution: establishing a Community of Practice (CoP) focused on the regulation and governance of AI in healthcare. For a nascent and rapidly evolving technology like generative AI, a CoP provides a dynamic and collaborative alternative to static, top-down regulation [8].

Additionally, the CoP is uniquely suited to address the regulatory and governance challenges in SEA due to its ability to foster ongoing, trust-based collaboration among diverse stakeholders. Unlike formal regulatory bodies, a CoP can adapt quickly to new developments, facilitate peer learning, and bridge gaps between countries with varying levels of digital maturity and regulatory capacity. By bringing together policymakers, practitioners, technologists, and civil society, the CoP enables the co-creation of context-sensitive guidelines and standards that reflect the region's cultural, linguistic, and infrastructural diversity.

Furthermore, the CoP model encourages the sharing of real-world experiences, lessons learned, and best practices, which helps avoid duplication of effort and accelerates the adoption of effective solutions. It can also serve as an incubator for innovative regulatory approaches, such as regional sandboxes or mutual recognition agreements—that would be difficult to implement through traditional, siloed mechanisms. In a region where resources and expertise are unevenly distributed, the CoP acts as a collective knowledge base and support network, empowering less-resourced countries to participate meaningfully in shaping AI governance.

Key features of this proposed CoP are described below. Figure 1 illustrates how these features will address the aforementioned challenges faced by the various stakeholders.

1. **Regular Meetings for Knowledge Exchange:** Scheduled gatherings of CoP members will facilitate timely sharing of the latest AI developments, regulatory updates, and implementation experiences across SEA. These meetings will help administrators and regulators stay proactive, anticipate emerging trends, and identify opportunities for regional collaboration.
2. **Joint Statements on Safety and Best Practices:** The CoP will issue joint statements to consolidate and communicate shared concerns, lessons learned from adverse events, and recommended safety practices. These consensus documents will serve as regional references, guiding member countries in addressing common challenges and preempting risks.
3. **Harmonised Regulatory Approaches:** Through collaborative dialogue, the CoP will work towards harmonising regulatory standards and processes across SEA. This alignment will streamline approval pathways, reduce duplication of effort, and enable mutual recognition of AI solutions, making it easier for innovations to be adopted regionally.

Figure 1: Overview of the proposed Community of Practice (CoP)

4. **Regional Regulatory Sandboxes:** The CoP will coordinate the establishment of cross-border regulatory sandboxes, allowing developers to pilot AI solutions in multiple SEA countries under real-world conditions. These sandboxes will foster joint learning, accelerate the development of context-appropriate governance frameworks, and provide regulators with shared insights into the performance and risks of new technologies.

6 Potential Limitations of the Community of Practice and Mitigation Strategies

While a CoP offers a promising approach to address the aforementioned challenges, its limitations must be acknowledged. First, sustaining engagement can be difficult, as CoPs can lose momentum if members disengage over time. To mitigate this, it is important to establish clear roles, maintain regular meeting schedules, and produce tangible outputs, which will incentivize sustained participation.

The diversity of priorities and contexts across SEA countries may also lead to divergent views or disagreements on best practices. To overcome this, the CoP should foster an inclusive environment that values local context, employs consensus-building methods, and allows for flexible, context-specific recommendations rather than imposing rigid standards.

Finally, CoPs often lack formal authority, as it is a non-regulatory body. Building credibility through evidence-based outputs, engaging with policymakers, and demonstrating value by piloting collaborative initiatives can help the CoP influence formal regulation despite this limitation. By addressing these limitations, the CoP can maximize its effectiveness and sustainability as a collaborative platform.

7 Conclusion

The leadership summit participants jointly call for the establishment of a SEA CoP on Healthcare AI Regulation and Governance. This initiative ensures the safe, effective, and equitable deployment of generative AI in the region. Therefore, we call on the following stakeholders to join us in this effort:

- **AI Researchers and Developers:** Your expertise is indispensable. We need you to help regulators understand the technology behind LLMs, from the performance nuances of frontier models to the core concepts of explainability and fairness. We call on you to help develop robust evaluation methodologies suited to SEA's diverse contexts and to provide pragmatic advice on what can be reasonably expected of developers under proposed

regulations. This includes research into culturally-aware bias detection and mitigation techniques.

- **Administrators:** We invite administrators from SEA and around the world to share international best practices and exchange ideas. Your guidance can help the CoP contextualize global frameworks for culturally sensitive and locally specific clinical practices. This group should include a broad range of leaders, from policymakers and civil servants to hospital executives and medical board members.
- **Healthcare Professionals:** Your active participation is critical. The CoP needs your frontline perspective to understand clinical needs and craft practical governance measures. By co-creating the regulatory boundaries, we can delineate professional responsibilities fairly, ensuring clinicians are not unduly burdened with liability for model failures. This will engender trust and confidence in AI tools. Furthermore, the CoP will serve as a channel for you to upskill, learn to use AI safely, and provide vital feedback on the real-world impact of these technologies.
- **Civil Society and Patient Advocates:** We urge you to participate actively in the CoP, bringing perspectives on privacy, equity, and ethical considerations. Your involvement will help build public trust and ensure that AI solutions are developed and deployed in a manner that respects human rights and promotes health equity.

By bringing these diverse voices together, the SEA CoP can forge a path toward responsible AI innovation that truly serves the health and well-being of all people in the region.

Acknowledgments and Disclosure of Funding

Use unnumbered first level headings for the acknowledgments. All acknowledgments go at the end of the paper before the list of references. Moreover, you are required to declare funding (financial activities supporting the submitted work) and competing interests (related financial activities outside the submitted work). More information about this disclosure can be found at: `https://neurips.cc/Conferences/2025/PaperInformation/FundingDisclosure`.

Do **not** include this section in the anonymized submission, only in the final paper. You can use the `ack` environment provided in the style file to automatically hide this section in the anonymized submission.

References

[1] The Lancet Regional Health-Southeast Asia. Quality of maternal care in the southeast asia region. *The Lancet Regional Health-Southeast Asia*, 25:100433, 2024.

[2] Joy Buolamwini and Timnit Gebru. Gender shades: Intersectional accuracy disparities in commercial gender classification. In *Conference on fairness, accountability and transparency*, pages 77–91. PMLR, 2018.

[3] Virasakdi Chongsuvivatwong, Kai Hong Phua, Mui Teng Yap, Nicola S Pocock, Jamal H Hashim, Rethy Chhem, Siswanto Agus Wilopo, and Alan D Lopez. Health and health-care systems in southeast asia: diversity and transitions. *The Lancet*, 377(9763):429–437, 2011.

[4] Richard J Coker, Benjamin M Hunter, James W Rudge, Marco Liverani, and Piya Hanvoravongchai. Emerging infectious diseases in southeast asia: regional challenges to control. *The Lancet*, 377(9765):599–609, 2011.

[5] Aurel Croissant and Christoph Trinn. Culture, identity and conflict in asia and southeast asia. *Asien*, 110(S):13–43, 2009.

[6] Lilian Edwards. The eu ai act: a summary of its significance and scope. *Artificial Intelligence (the EU AI Act)*, 1:25, 2021.

[7] Aya El Mir, Lukelo Thadei Luoga, Boyuan Chen, Muhammad Abdullah Hanif, and Muhammad Shafique. Advancing healthcare in low-resource environments through an optimization and deployment framework for medical multimodal large language models. In *2024 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)*, pages 1–8. IEEE, 2024.

[8] Mads Lægdsgaard Madsen and Egon Noe. Communities of practice in participatory approaches to environmental regulation. prerequisites for implementation of environmental knowledge in agricultural context. *Environmental science & policy*, 18:25–33, 2012.

[9] Mahmud Omar, Vera Sorin, Reem Agbareia, Donald U Apakama, Ali Soroush, Ankit Sakhuja, Robert Freeman, Carol R Horowitz, Lynne D Richardson, Girish N Nadkarni, et al. Evaluating and addressing demographic disparities in medical large language models: a systematic review. *International Journal for Equity in Health*, 24(1):57, 2025.

[10] Asia PPH. Precision public health asia, publications, reports, 2023. Retrieved on 24th August 2025 from `https://pphasia.com/publications/papers-reports/precision-public-health-asia-2023-conference/`.

[11] Western Pacific TLRH. Health innovations to achieve universal health coverage in the western pacific region. *The Lancet Regional Health: Western Pacific*, 41:101000, 2023.

[12] Siyan Yi, Esabelle Lo Yan Yam, Kochukoshy Cheruvettolil, Eleni Linos, Anshika Gupta, Latha Palaniappan, Nitya Rajeshuni, Kiran Gopal Vaska, Kevin Schulman, and Karen N Eggleston. Perspectives of digital health innovations in low-and middle-income health care systems from south and southeast asia. *Journal of Medical Internet Research*, 26:e57612, 2024.